

Laser Safety Device



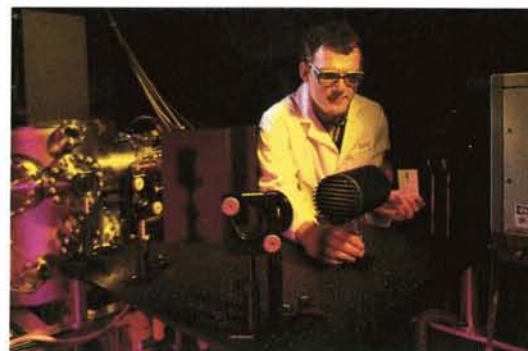
NASA *Tech Briefs* is a publication designed to inform potential users of NASA technology available for transfer. It frequently inspires development of a spinoff product, more often finds utility as a problem-solving tool for its government and industry readers. An example of the latter use of NASA technology is the experience of Air Products and Chemicals, Inc., Allentown, Pennsylvania.

The company's Laser Applications Laboratory is a recent addition established to support Air Products' current business and technical growth. A major focus of the laboratory's work is on use of ultraviolet (UV) radiation using high energy excimer lasers. This poses a safety problem because light within the wavelength range of excimer lasers is invisible and it can cause serious damage to eyes and tissue.

Therefore, it was necessary to develop an apparatus to contain the laser beam. An essential component of such an apparatus is a beam block for effectively trapping laser light. However, because the output power of these lasers can exceed 500 watts, there were very few commercially available

beam stops capable of absorbing UV light at such power for long periods, so Air Products decided to develop its own.

While planning an approach, company scientists E.J. Karwacki, Jr. and S.D. Hanton read in *NASA Tech Briefs* of related work on UV light absorption conducted by Jet Propulsion Laboratory (JPL). They requested and received a Technical Support Package describing in detail the JPL inven-



tion, which involves use of a graphite plate mounted to an aluminum heat sink for absorbing light from high energy lasers.

Air Products incorporated the NASA technology into its beam stops. The main body of the company's beam stop is an aluminum cylinder, its inner surface roughened by machining turns to maximize light reflection and capture (**left**). Tap holes are provided along the exterior of the cylinder for placing metal rods to mount the beam on-line with the laser beam. A piece of graphite bolted onto an aluminum heat sink is attached to the rear of the cylinder; it absorbs the light trapped within the cylinder. **Above**, a physicist is aligning the beam stop so that it interrupts the laser pathway and absorbs the beam, allowing him to work in the target area without shutting off the laser. ●

